RMS Omega technologies

TL-G1 Probe User Guide

Version 1.0

Contents

About the Probe

The Translogik G1 Tyre Probe is designed as a front end data collection tool to carry out fleet inspections accurately. Details of the vehicles tread and pressure readings are recorded all without the need to write a single word.

The probe is designed to interface with our customers own TPMS software. If you do not have software and are working to develop your own, refer to the *Developer User Guide* for more details.

When the inspection is complete, the data is sent via Bluetooth to the customers hand-held device.

The G1 Tyre Probe kit comprises of:

1. **G1 Tyre Probe**: This battery powered hand-held unit is used to measure the tread depth and air pressure of a both commercial and passenger vehicle tyres.
2. **Calibration Block**: This is a cylindrical piece of aluminium, flat at one end and has a 16.0mm depth hole the other end. It is used for calibrating the tread measurement of the probe.
3. **Air Hose Adapter**: This is the air hose adapter. It is used for connecting the probes air inlet to a standard tyre valve when taking pressure measurements. Refer to *Probe Features on page 5* for a full description of the probe.
4. **DC Power Supply**: This is a 12v DC power supply for charging the probe's built-in batteries.

Getting Started

Using New Tyre Probes

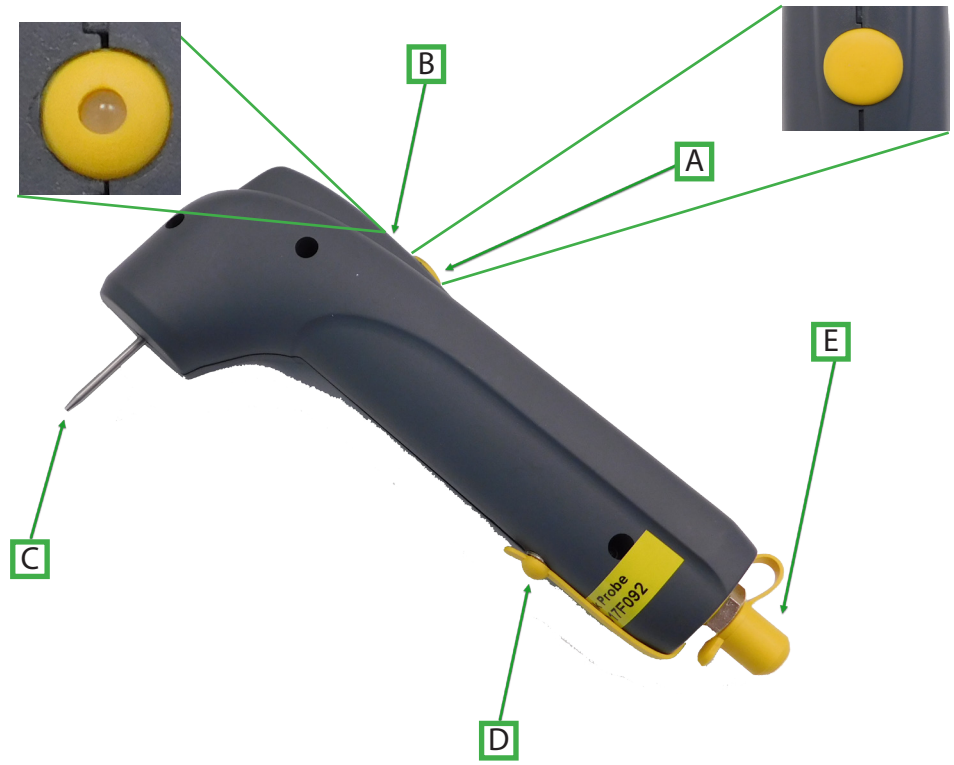
- When you receive a new probe, make sure you fully charge it before use. See *Charging the Battery on page 12* for full details.
- Before the probe is used for the first time, it should be calibrated. It is then recommended the calibration be carried out once every six months.
- You will need the supplied calibration block as well as a known air pressure. For more details on calibration, see *Calibrating the Probe on page 15.*
- Make sure you read through this manual fully before using the probe.

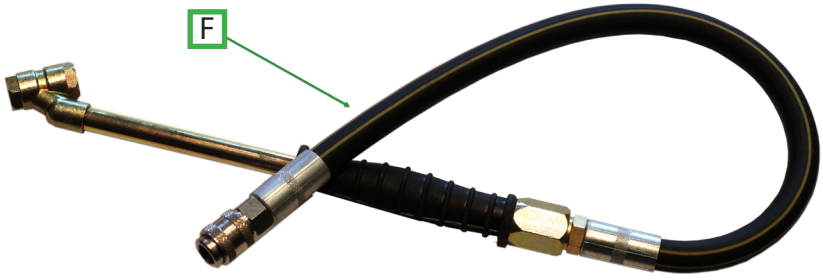
Probe Features

The probe unit is a hand-held device supplied to conduct three tasks:

1. Measure tyre tread depths.
2. Measure tyre pressures.
3. Transmit the above data to a remote processing point (for example, a mobile device).

A spring-loaded needle (***C***) is used to measure the displacement (tyre tread depth) as it is pushed at a right angle between the tyre tread. A part flexible air-line (***F***) is connected to the probe body and tyre pressure readings can be taken. Data transmissions are via a Bluetooth link and are triggered automatically during the measurement process. The probe is rechargeable and houses an intelligent charging circuit.





A - PUSH BUTTON - Push-button, used to turn the probe on and off, and check the battery status.
B - LED INDICATOR - LED light. Displays the current status of the probe.
C - TREAD DEPTH NEEDLE - Spring loaded probe, used to take tyre tread measurements.
D - CHARGE PORT – Probe charger. Used to charge the probe.
E - TYRE PRESSURE CONNECTOR - Air pressure intake. Connect the Tyre Adaptor to take pressure measurements.
F - TYRE ADAPTOR HOSE - Hose for pressure measurements. Allows the probe to connect to a standard tyre valve whilst taking pressure measurements.

Using the Probe

Operation of the LED Indicator

The probe incorporates an LED indicator to show the operation and status of the probe.

The following table describes the operation of the LED indicator:

COLOUR	POWER OFF	POWER ON	BATTERY STATUS MODE
RED	-	Initialising Probe (Upon power up)	Battery Low, requires charging
RED FLASHING	Conditioning Charge	Battery Low	-
GREEN	-	Probe Ready	Battery Good
GREEN FLASHING	-	Probe Ready & Battery Low	-
AMBER	-	-	-
AMBER FLASHING	Fast Charge	-	-
GREEN PULSING	Charge completed	-	{V5.01 or newer firmware only}

Turning on the Probe

The probe is operated using the **Push Button**. To turn on the probe:

1. Press and hold **Push Button** until the **LED Indicator** lights RED. This usually takes 2 to 3 seconds.
   NOTE: The probe is now powering up and initialising.
2. After about 7-12 seconds the **LED Indicator** should change to GREEN.

RESULT: The probe is now powered up and ready to use.

Turning off the Probe

The probe is operated using the **Push Button**. To turn off the probe:

1. Press and hold **Push Button** until the **LED Indicator** goes out. This usually takes 2 to 3 seconds.

RESULT: The probe is now powered down and in **Stand-By** mode.

> ***NOTE***: If the probe is plugged into the charger when it is turned off, the **LED Indicator** will not extinguish if the battery is charging. Instead the **LED Indicator** flashes repeatedly to display the charging mode. The probe automatically turns off or goes into **Stand-By** mode once the charge cycle is complete.

Checking the Battery Status

1. With the probe in **OFF** or **Stand-By** mode, press and hold **Push Button** for 1 second.
2. Release **Push Button**. The **LED Indicator** should illuminate GREEN for approximately 1 second and then it will display the battery status for a further 2-3 seconds.

RESULT: If GREEN, the probe battery is charged. If RED the probe battery is low and requires charging.

Probe Measurements Mode

The probe can take tread and pressure measurements in two ways:

- **Automatic** - The probe automatically sends measurements after it senses a change in either tread depth or air pressure and when it senses the tread or pressure measurement stabilise.
- **Manual** - Tread and pressure measurements can be taken anytime by sending a **T** or **P** command via the Bluetooth to the probe. When the probe receives this command it will take the relevant measurement and transmit the data back. *Using the TLG1 Enhanced Operation Modes on page 14*.

Taking Automatic Tyre Tread Measurements

Before you start to take measurements, make sure:

1. Your mobile device is turned on.
2. Your mobile device is connected.
3. Your software is ready to accept tread depth measurements.

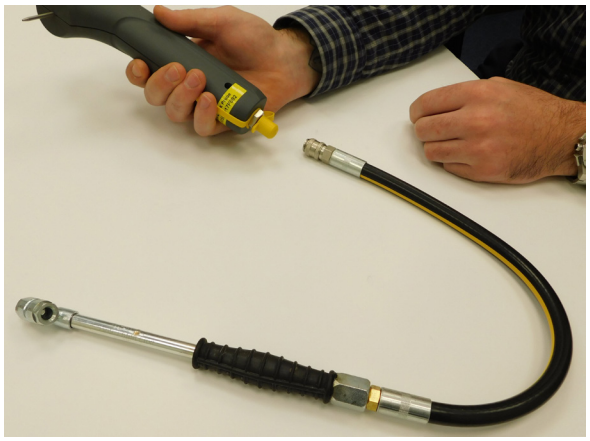
Refer to your software manual for full instructions on navigating your software.

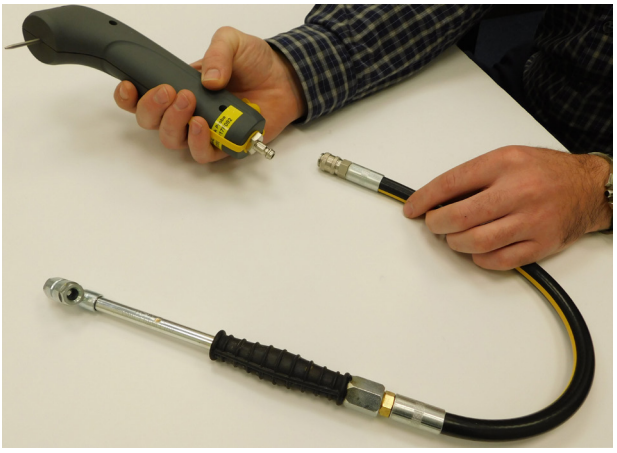
1. Ensure the **LED indicator** is GREEN and the probe is ready to use.
2. Make sure the tread is free from mud and grit and place the **Tread Depth Needle** into the tyre tread at a right angle to the surface of the tyre.
3. Ensure the **LED indicator** is still GREEN and in one smooth motion, push the probe head down toward the tyre until it is flat against the top of the tread.
4. When the head of the probe is flat on the surface of the tyre and the depth needle stops retracting the data will automatically be sent to the mobile device.
5. When you see, or hear depending on software the depth reading on the mobile device remove the probe from the tyre, again in one smooth operation, until the **Tread Depth Needle** is fully extended.

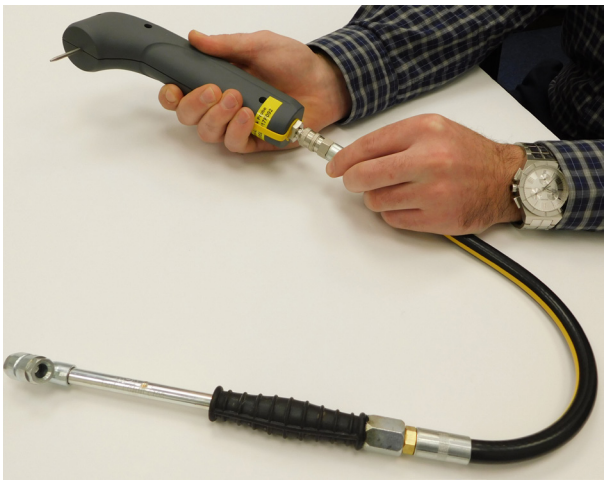
RESULT: The probe is ready to use for the next measurement.

Taking Automatic Tyre Pressure Measurements

This instruction assumes the mobile device is turned on, the probe is turned on and connected and the software has progressed to the point where it is ready to accept tread depth measurements. Refer to your software manual for full instructions on navigating the software







1. Ensure the **LED indicator** is GREEN and the probe is ready to use.
2. Connect the **Tyre Adaptor Hose** to the **Tyre Pressure Connector** on the probe.
3. In one smooth operation, push the **Tyre Adaptor Hose** on to the tyre valve until air is released into the probe. When the pressure in the hose stabilises the data is automatically sent to the mobile device.
4. Hold the **Tyre Adaptor Hose** on the valve until you see (or hear depending on software) the measurement is displayed on the mobile device.
5. Remove the **Tyre Adaptor Hose** in one smooth operation from the tyre valve.

RESULT: The probe is ready to use for the next measurement.

Useful Operating Tips

- After a reading has been taken allow the probe needle to fully return before taking the next depth measurement.
- Ensure there is no obstruction in the **Air Connector** when connecting the **Tyre Adaptor Hose**.
- After a reading has been taken, remove the air pressure as quickly and smoothly as possible when taking pressure measurements.
- Ensure the probe is turned off when fitting or removing the tyre adapter.
- You should only attach the tyre adaptor hose when measuring pressure. The probe device is easier to handle for depth measurements if the tyre adapter is removed.
- If the probe ever returns an error or loses its zero position, for example, the unit fails to take automatic measurements due to improper operation, simply turn the probe off and then on again using the **Push Button** to reset the device.

Charging the Battery

The probe contains an intelligent charger circuit to help maintain the batteries. Charge the probe using the charger power supply inside the **Carry Case**.

To re-charge the internal batteries of the probe:

1. Ensure the **probe** is turned OFF.
2. Plug the 12VDC Power Supply into the **Charge Port** on the probe. The **Probe Indicator** should illuminate FLASHING RED to indicate the probe is in conditioning charge mode.
3. After 2-10 minutes, the **Probe Indicator** should change to FLASHING AMBER to indicate it is in fast charge mode.
4. When the **Probe Indicator** goes out, the probe is fully charged.
   NOTE: On later versions of firmware the indicator briefly pulses green every few seconds to indicate the probe is charged and the charger is still connected.

Important Notice:

- If the **Probe Indicator** does not illuminate when it is first plugged, the battery is fully charged.
  NOTE: The charging circuit is intelligent and has the capability to relay full charge information to the **LED Indicator**.
- On later versions of firmware (V5.01 or newer), the **LED Indicator** briefly pulses green every few seconds to indicate the probe is charged and the charger is still connected.
- If the probe's battery has been allowed to go totally flat for an extended period of time, the battery can reject the charge and terminate early. In this situation, place the probe straight back on charge again. Keep putting the probe on charge repeatedly until it has had a total of four hours charge time. The battery should recover after 2-3 charge / discharge cycles.
- If the **Probe Indicator** remains in conditioning charge mode (FLASHING RED) for longer than 20 minutes this could mean the following;
  1. The environmental conditions are not correct. (for example, too cold or too hot). The intelligent charger circuit has got out of sequence.
  2. There is a fault with the probe or battery.
  3. If this occurs first try unplugging the **Probe Charge Cable** from the **Charge Port** on the probe, wait for 20 seconds and plugging back in again. If this has no effect try charging in a more acceptable environment.

Connecting using Bluetooth

The probe communicates to your mobile Bluetooth-enabled device using a standard Bluetooth V2.0 (or V2.1 dependant on model) wireless connection. The probe uses the standard virtual serial port protocol to send and receive standard ASCII format serial data, which enables it to operate in a very similar manner to many other serial device such as modems.

> ***NOTE***: Different mobile devices all have different software for managing Bluetooth connections, however using a standard Bluetooth protocol means that every type of mobile device has to function in a similar way to connect to the devices.

Useful Connection Settings:

COM Port	**Assigned by Bluetooth Manager Application**
Bluetooth Passkey	**1234**
Baud Rate	**9600 bps**
Data bits	**8**
Parity	**None**
Stop Bits	**1**
Start Bits	**1**

The basic steps for connecting to the probe are as follows:

1. Search & detect the Bluetooth connection of the Probe

Most Bluetooth applications have a method of searching for the available Bluetooth devices. The probe usually shows up during the search with the name "**TLG1Probe DXXXXXX**".

2. Pair with the Probe

Most Bluetooth applications let you pair with the probe. Pairing is a way of indicating to the hand-held device which other device(s) you want to connect to. Bluetooth security measures must pass through as part of the pairing process and you may be asked for a passkey. Bluetooth uses a simple four digit passkey to authenticate the connection. The default passkey for all probes is "**1234**".

3. Discover the available service

The probe uses the standard serial port protocol, which often has to be selected from the service list. This service is called **SPP** and must be selected before the device can assign the probe its COM port number. A COM port number is assigned to the probe once the serial port service is selected.

4. Connect to the serial port and communicate

Standard serial communications routines can be used to connect to the assigned COM port. Communication is performed using standard ASCII text format. The software application on your hand-held device should automatically handle any communications with the probe giving the operator a user-friendly interface to use the probe. You can also use other COM's applications like Hyperterminal to communicate with the probe. The list of commands can be found in the document *Bluetooth Command Protocol for RFID Enabled Tread Depth Probe*.

Using the TLG1 Enhanced Operation Modes

For enhanced operation the probe can function in many different modes which allows the probe to report its measurements in different ways. These modes are:

Tread Depth Modes:

- **Actual (Data)** - When set to **Actual Mode**, the probe returns the raw measurement data from the embedded analogue to digital converter. This data is returned in decimal format as ASCII text. This data is in the range ***0 to 1024***. For example, ***T1010***.
- **Millimetre Measurement Mode** - When set to **mm Mode**, the probe returns the tread measurement in actual millimetres. This data is returned in ASCII text format. This data is typically in the range ***0 to 28mm***. This mode only functions correctly if the probe has been calibrated and it contains tread measurement calibration data in its internal memory, for example, T19.85.
- **Decimal Inches Measurement Mode** - When set to **Inch Mode**, the probe returns the tread measurement in actual inches. This data is returned in ASCII text format. This data is typically in the range ***0 - 1.10***. This mode will only function correctly if the probe has been calibrated and it contains tread measurement calibration data in its internal memory, for example T0.76
- **1/32 Inches Measurement Mode** - When set to **1/32 Inch Mode** the probe returns the tread measurement in actual imperial 1/32 of an inch. This data is returned in ASCII text format. This data is typically in the range ***0 - 35***. This mode only functions correctly if the probe has been calibrated and it contains tread measurement calibration data in its internal memory, for example T24.

Pressure Modes:

- **Actual (Data)** - When set to **Actual Mode** the probe returns the raw measurement data from the embedded analogue to digital converter. This data is returned in decimal format as ASCII text. This data is in the range ***0 to 1024*** for example ***P1010***.
- **BAR Measurement Mode** - When set to **BAR Mode** the probe returns the pressure measurement in actual BAR. This data is returned in ASCII text format. This data is typically in the range ***0 - 10***. This mode only functions correctly if the probe has been calibrated and it contains tread measurement calibration data in its internal memory, for example ***P6.45***.
- **PSI Measurement Mode** - When set to **PSI Mode** the probe returns the pressure measurement in actual PSI. This data is returned in ASCII text format. This data is typically in the range ***0 to 150PSI***. This mode only functions correctly if the probe has been calibrated and it contains tread measurement calibration data in its internal memory, for example ***P99.55***.
- **kPa Mode** - When set to **kPa Mode** the probe returns the pressure measurement in actual kPa. This data is returned in ASCII text format. This data is typically in the range ***0-1035***. This mode only functions correctly if the probe has been calibrated and it contains tread measurement calibration data in its internal memory, for example ***P569***.

Other Modes:

- **"One-Click" Mode** - In **One-Click Mode**, you are measuring tyre tread and pressure every time the push button on the top of the probe is pressed for between 0.25 and 3 seconds, The probe then sends a command back to your mobile device to let it know the button has been pressed. This command can be used in the mobile device (If your software supports click feature) to automatically switch between tyres and/or vehicles.
- **Idle Time-out Mode** - To save battery power if the probe is inactive for a set period of time, the probe automatically shuts itself off. This shut down period can be set between 0 and 255 minutes. Setting this value to 0 will disable the time-out mode.

For more information on enhanced operation, serial commands and how to use them please refer to the *TLG1-Probe Developers Guide*.

Calibrating the Probe

You can calibrate tread depth in either mm or inches, and pressure in either PSI, BAR or KPa measurement modes. To calibrate, the probe must be given 4 calibration values. These 4 values are:

1. Tread measurement at 0mm (X3 Value)
2. Tread Measurement at 16mm (X4 Value)
3. Pressure measurement at 0 PSI (X5 Value)
4. Pressure measurement at 100 PSI (X6 Value)

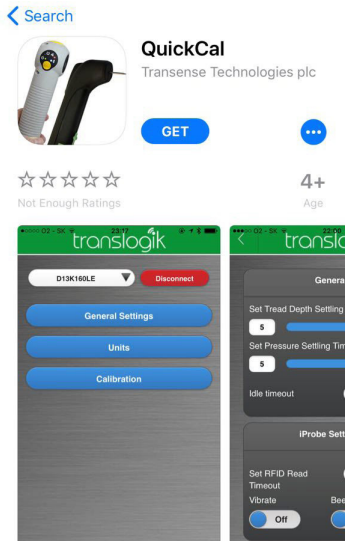
Your software should include a small calibration routine to allow these values to be set. Every application is different, but the general calibration procedure must be similar.

If calibration is not part of your tyre management application, you can also use Translogik's **QuickCal** to quickly calibrate your probe.

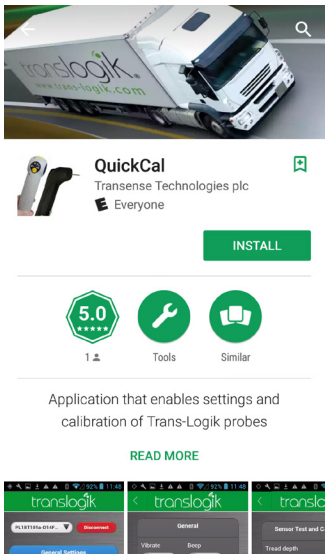
Go to the App Store for an iPhone or iPad or the PlayStore for an Android device to download the free app.

NOTE: The probe must be calibrated before the first use and then at a minimum of every six months.

For iPhone



For Android



Use the following procedures to calibrate your probe:

1. *Calibrating tread on page 16*
2. *Calibrating pressure on page 16*

Calibrating tread

1. Using the flat end of the calibration block, set the tread depth needle to **0mm** by pushing the nose of the probe fully flat on the block.
2. Click **Calibrate 0mm** or similar button on the mobile device application.
3. Select **OK** or the appropriate choice on your software application.
4. Wait a couple of seconds then release the tread depth needle back to its fully extended position.
5. Using the **16mm** end of the calibration block set the tread depth needle to **16mm** by pushing the nose of the probe fully flat upon the top of the block and the needle inside the **16mm** deep hole.
6. Click **Calibrate 16mm** or similar button on the mobile device application.
7. Select **OK** or the appropriate choice on your software application.
8. Wait a couple of seconds then release the tread depth needle back to its fully extended position.

RESULT: Your probe is calibrated for tread readings.

Calibrating pressure

1. Using atmospheric pressure as **0PSI**, set the pressure to **0PSI** by ensuring the pressure inlet is vented to atmosphere and there is no pressure applied to the probe.
2. Click **Calibrate 0PSI** or similar button on the mobile device application.
3. Select **OK** or the appropriate choice on your software application.
4. Using a known **100PS**I pressure set the pressure value by applying the 100 PSI air pressure to the inlet of the probe.
5. Click **Calibrate 100PSI** or similar button on the mobile device application.
6. Select **OK** or the appropriate choice on your software application.
7. Wait a couple of seconds then release the air pressure and allow the inlet to vent to atmosphere.

RESULT: Your probe is calibrated for pressure readings.

Maintaining the Probe

Care and Handling

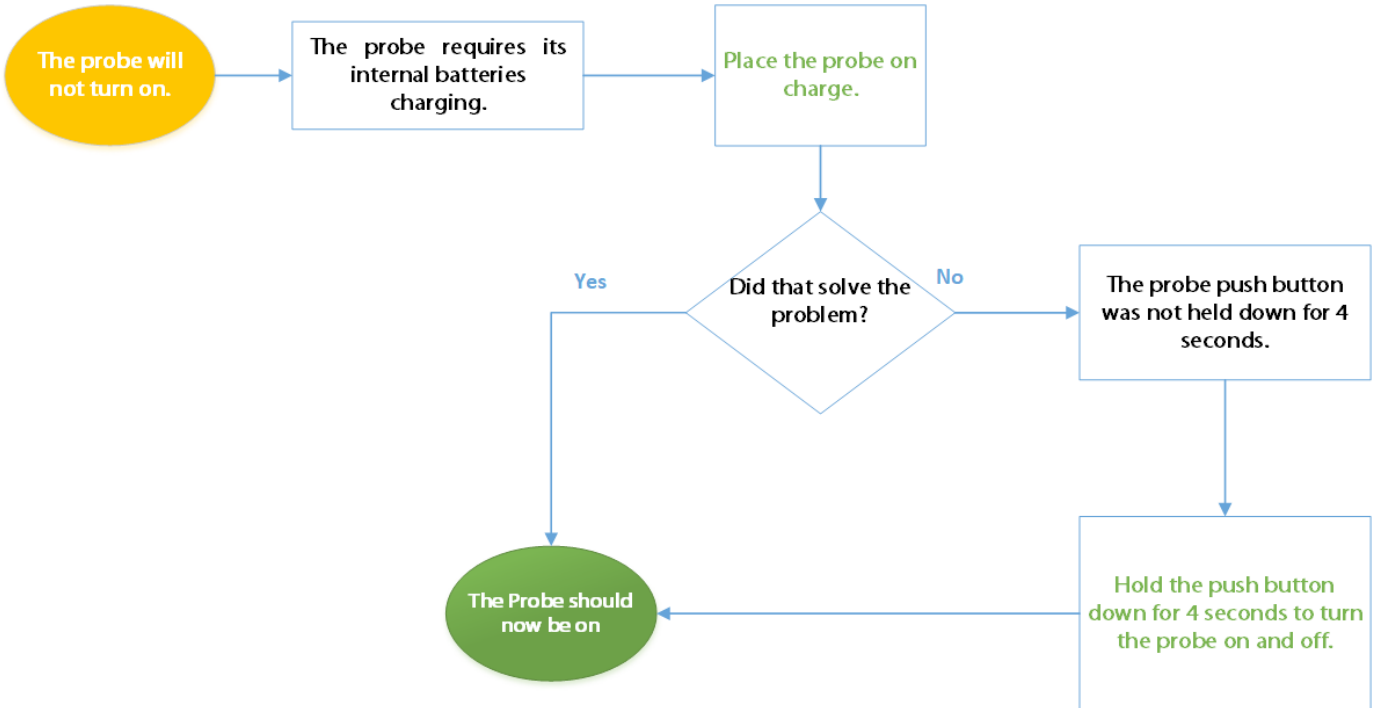
The probe is designed for rugged industrial use. Handling the equipment with care, however, increases its accuracy, usability and life span. Some pointers for particular attention are as follows:

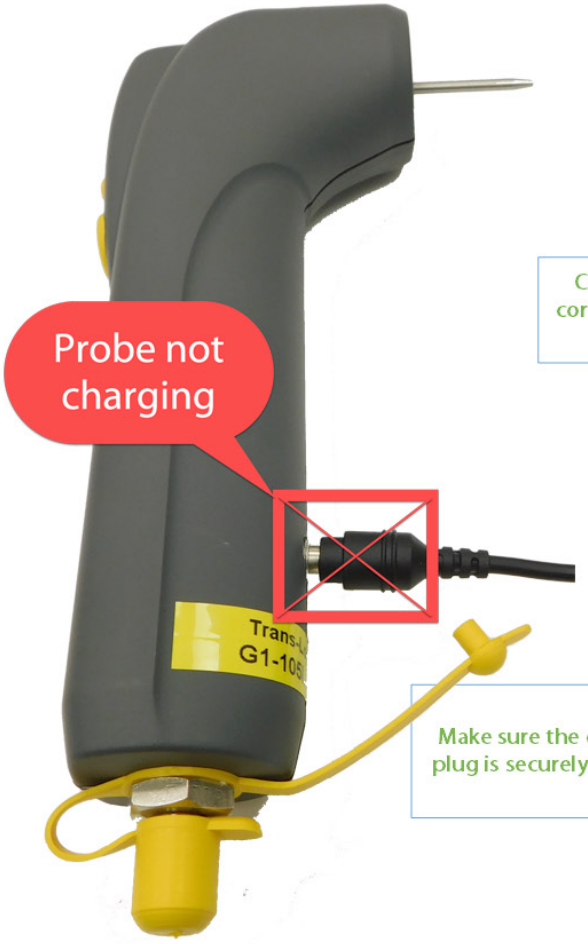
- Read the operating instructions fully before operating the equipment.
- Follow the operating instructions carefully whilst operating the equipment.
- Keep the probe as clean and dry as possible, especially around the **Tyre Adaptor Hose**, **Tread Depth Needle** and **Charge Port**.
- Never use the probe's **Tread Depth Needle** as a pry bar or lever.
- Never operate the charger outdoors.
- If the equipment is not being used, ensure the probe gets a full charge at least once a week.
- Always use the correct charging devices to charge the equipment and never use any type of charger or power supply off any other equipment or supplier.
- Always ensure the plugs are securely inserted into the equipment whilst charging.

Troubleshooting

If you run into any problems, check you are performing the operation correctly as per the instructions. Read all instructions carefully to ensure you follow the correct procedures.

If you still have problems with the probe, check through the following possibilities.





Issue

The probe will not charge.

Possible Problem

There is no power to the charger or the charger is not turned on.

Check that the charger PSU is correctly plugged into the Probe.

Did that solve the problem?

Yes

No

Check the charger PSU is plugged correctly into the mains supply and is turned on.

If you are using the cigarette lighter socket on your vehicle, make sure it is working as some only function with the vehicle ignition switch turned on.

Did that solve the problem?

Yes

No

Make sure the external power / cigarette lighter cable supply plug is securely inserted into the charger socket on the probe.

Did that solve the problem?

Yes

No

Check the fuse in the mains cable of the external power supply.

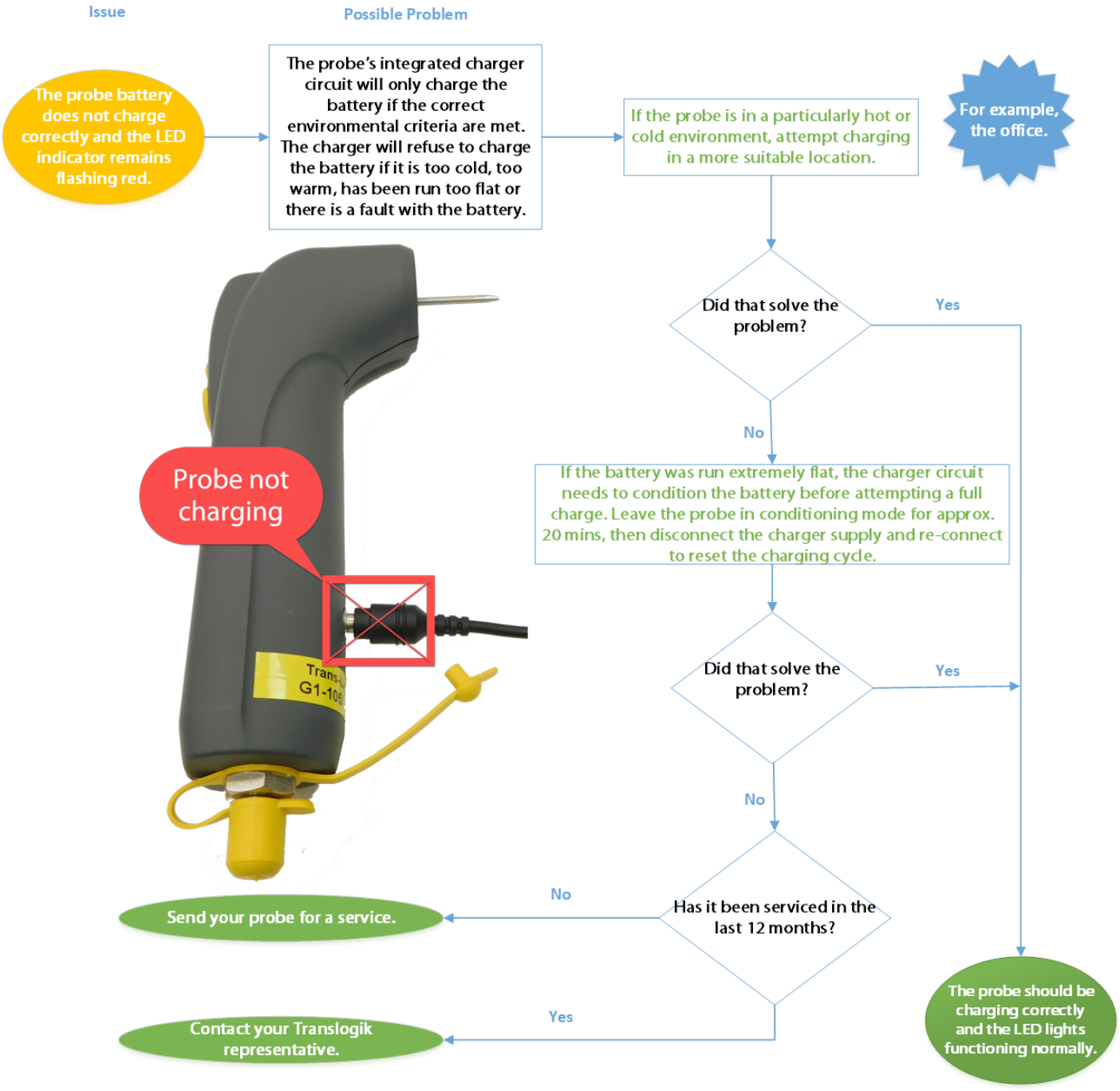
Did that solve the problem?

Yes

No

Contact your Translogik representative.

The probe should be charging.


Issue
Possible Problem
The probe battery does not charge correctly and the LED indicator remains flashing red.
The probe's integrated charger circuit will only charge the battery if the correct environmental criteria are met. The charger will refuse to charge the battery if it is too cold, too warm, has been run too flat or there is a fault with the battery.
If the probe is in a particularly hot or cold environment, attempt charging in a more suitable location.
For example, the office.
Did that solve the problem?
Yes
No
If the battery was run extremely flat, the charger circuit needs to condition the battery before attempting a full charge. Leave the probe in conditioning mode for approx. 20 mins, then disconnect the charger supply and re-connect to reset the charging cycle.
Did that solve the problem?
Yes
No
Has it been serviced in the last 12 months?
No
Send your probe for a service.
Yes
Contact your Translogik representative.
The probe should be charging correctly and the LED lights functioning normally.
Probe not charging

Issue

The probe battery does not charge correctly and the charge keeps terminating early or the probe seems unable to retain its charge for any reasonable length of time.

Possible Problem

If the probe's battery has been allowed to go totally flat for an extended amount of time the battery can reject the charge and terminate early.

When the charge terminates, place the probe back on charge again. Keep repeating this until the battery has had a total of 4 hours of charge time.

The battery should recover after 2-3 charge / discharge cycles.

Did that solve the problem?

Yes

The probe should be charging correctly and retains its charge

No

If the probe has not been serviced for more than 12 months, the internal battery may have become worn.

The Probe will require service

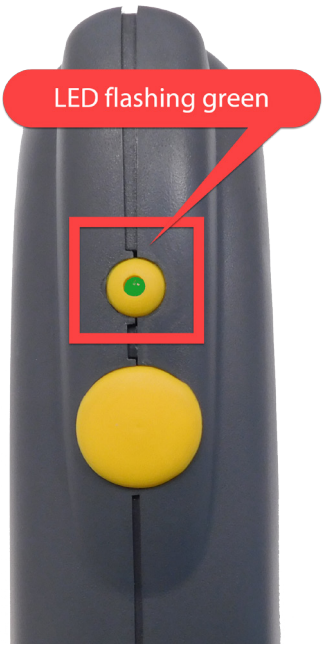
Has it been serviced in the last 12 months?

No

Send your probe for a service.

Yes

Contact your Translogik representative.



Issue

The probe will not turn on and when I plug in to charge, the LED light illuminates constant green.

Possible Problem

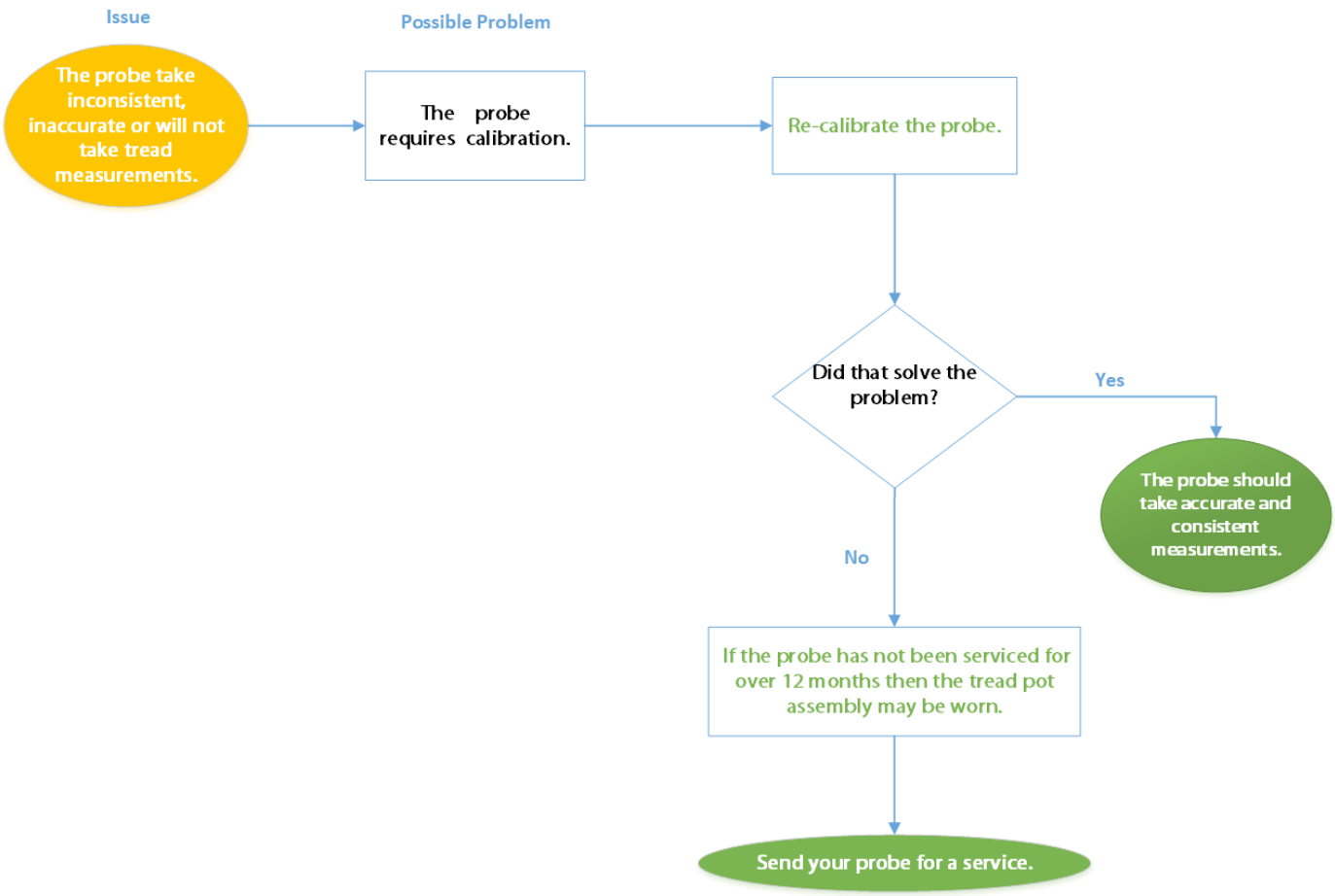
The probe's internal firmware has become corrupt.

The most common cause of the firmware becoming corrupt is an incorrect or failed firmware upgrade attempt.

Send your probe for a service.

If the probe has not been serviced for more than 12 months it is possible the internal battery has become worn.


Tread measure reading not accurate


Issue
Possible Problem
The probe take inconsistent, inaccurate or will not take tread measurements.
The probe requires calibration.
Re-calibrate the probe.
Did that solve the problem?
Yes
The probe should take accurate and consistent measurements.
No
If the probe has not been serviced for over 12 months then the tread pot assembly may be worn.
Send your probe for a service.

Service requirement

The probe contains serviceable and consumable parts and it's recommended that all TL-G1 series probes are serviced every 12 months of use. The service includes;

1. Replacement of Tread Pot Assembly.
2. Replacement of Battery Pack.
3. Replacement of seals and grommets.
4. Cleaning the internal parts & electronics.
5. Checking for and removing any blockages of the pressure assembly.
6. Upgrade to latest firmware revision if required.
7. Re-calibration and re-testing.

Translogik supplies a 12-month parts & labour warranty for any parts that are replaced.

- The unit is also be checked over for any other damage or wear and repairs are undertaken if necessary. Any parts replaced not covered by the service are charged in addition to the service cost.
- Any service or repair is only be undertaken by Translogik or by a Translogik authorised service agent.

For more information on the Translogik service contract or to get your Translogik product serviced please contact either Translogik or your IT Management / Department.